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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 873.0134.U1(US)

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on February 17, 2009

Signature: Gail Conway

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Application Number	Filed
10/718,837	November 21, 2003

First Named Inventor: Ragothaman et al.

Art Unit	Examiner
2683	Pasia, Redentor M.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [x] attorney or agent of record. Registration number 43,423
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34

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February 17, 2009
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NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

- [ ] *Total of _ forms are submitted.

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:

APPLICANTS:	Ragothaman, et al.
SERIAL NO.:	10/718,837
FILING DATE:	November 21, 2003
EXAMINER:	Pasia, Redentor M.
ART UNIT:	2683
DOCKET NO.:	873.0134.U1(US)
TITLE:	FLEXIBLE RATE SPLIT METHOD FOR MIMO TRANSMISSION

PRE-APPEAL BRIEF REQUEST FOR REVIEW ATTACHMENT

The following is a concise recitation of a clear error in the Examiner's rejections in this application.

1. In the Final Office Action of September 03,2008, the Patent Office rejected claims 1-4, 6-7, 9-11, 14-16, 18-23, and 25-28 as being unpatentable under 35 U.S.C. 103(a) over Ketchum, U.S. Published Patent Application No. 2003/0048856, in view of Dabak, U.S. Patent No. 6,594,473. (And, the Patent Office rejected claims 8 and 17 based on Ketchum, Dabak and Salvi and claim 24 based on Ketchum, Dabak, and Kim.)

A first clear error is that the Patent Office has not properly recognized that Ketchum teaches only a single data rate when multiple channels are transmitted in parallel.

Ketchum details a MIMO transmission in which a common coding and modulation scheme are used to provide modulation symbols, which are then pre-weighted for each selected transmission channel based on the channel's characteristics. Paragraph 0057 of Ketchum discloses "To achieve similar received SNR for all selected transmission channels, the modulation symbols for each selected transmission channel (j,k) may be pre-weighted by a weight that is related to that channel's SNR..." In Ketchum, the principle of operation is that throughput capacity is optimized by selecting only the 'best' channels for transmissions and not using the non-selected 'bad' channels for transmission (abstract, paragraphs 0028, 0032, 0088 and Figure 2B block 266). From all available MIMO channels, only the 'best' are selected for transmission while 'bad' channels are not used. Selection of these best channels is such that SNR for all of them are approximately similar, and so total available transmit power is distributed across these selected transmission channels. The SNR of these selected channels are matched to the coding and modulation scheme that is used for transmission.

Ketchum clearly relies on a single coding rate for each parallel transmission from

the different MIMO transmit antennas. In paragraph 0028, Ketchum discloses as follows: In one embodiment, which is referred to as selective channel inversion (SCI), only transmission channels having SNRs (or power gains) at or above a particular SNR (or power gain) threshold are selected for data transmission, and "bad" transmission channels are not used. Ketchum, in paragraph 0076, states "the same code rate is used for all selected transmission channels." Table 1 does not show per-channel rate, but the different rates that are appropriate to the SNR ranges that are determined for the selected (or available) transmission channels. The examples at paragraph 0103 bear this out in that each of the three different examples references only one coding rate to achieve the target of one information bit per modulated symbol. Though each example recites a coding rate different from the other examples, it is not a different coding rate for different antennas. These examples present as alternatives from which one may choose, given a SNR range for the selected channels. Regardless of the choice, all selected transmit antennas will transmit using the single coding rate that is particular to that choice, and all non-selected transmit antennas will not be used.

Since Ketchum is directed to using a single data rate for all channels when transmitting in parallel, Ketchum would not be amenable to modification to make obvious claim 1's subject matter of "transmitting in parallel the first transmission packet from a first antenna at a first rate at a first power modified by a first weight value over the first channel and the second transmission packet from a second antenna at a second rate that differs from the first rate and at the first power modified by a second weight value over a second channel." **To attempt such modification as the Patent Office would want to do would run contrary to the spirit of Ketchum's invention.**

A second clear error is the Patent Office assertion that Dabak teaches claim 1's subject matter of "transmitting in parallel the first transmission packet from a first antenna at a first rate at a first power modified by a first weight value over the first channel and the second transmission packet from a second antenna at a second rate that differs from the first rate and at the first power modified by a second weight value over a second channel." The Patent Office asserts, on pages 12-13 of the Final Office Action dated September 03, 2008, that col. 9, line 30, to col. 10, line 13, of Dabak teaches "transmission at a first rate" and "transmission at a second rate that differs from the first rate."

Although Applicant contends that it was be clear error for the Patent Office to treat Ketchum as if it were amenable to transmit in parallel at a first rate from a first antenna and at a second rate from a second antenna, even assuming for the sake of argument that Ketchum could be modified (Applicant firmly argues against such modification), Dabak does not remedy the deficiency that the Patent Office has identified in Ketchum.

Dabak does not teach explicitly or implicitly transmitting, in parallel, from a first antenna at a first rate and from a second antenna at a second rate that that differs from the first rate. On page 13, lines 2-3, of the Final Office Action dated September 03, 2008, the Patent Office asserts "**It is noted that since different weights (i.e. W1 and W2) are applied, the transmissions are held at different rates,**" in its discussion of Dabak. **This assertion is incorrect.** In showing such, it would be helpful to parse through language of this assertion in light of Figure 4 of Dabak to which the cited portion of Dabak refers. For the convenience of the reviewer, Figure 4 is reproduced below.

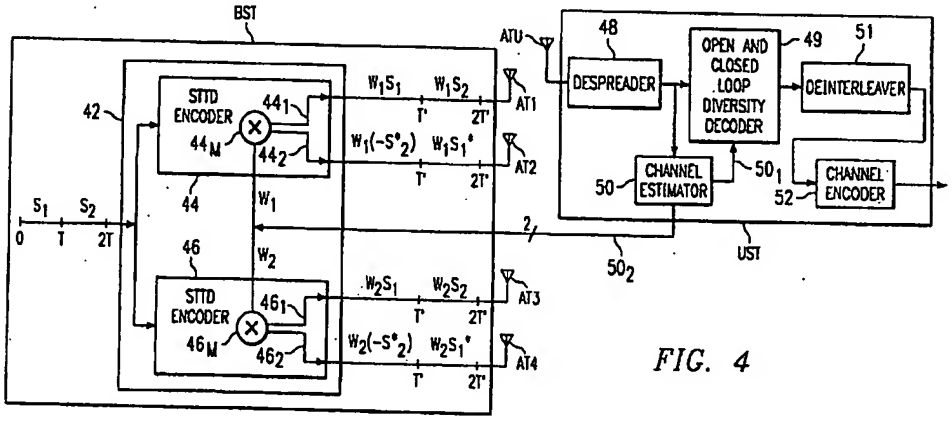

FIG. 4

Dabak clearly shows at time T', the symbols four weighted symbols are each transmitted through its respective antenna and at symbol 2T', another four weighted symbols are each transmitted through its respective antenna. **Since each antenna transmits a weighted symbol at unit time T', all antennas transmit at the same rate.**

Dabak does not teach or suggest claim 1's subject matter of "transmitting in parallel the first transmission packet from a first antenna at a first rate at a first power modified by a first

weight value over the first channel and the second transmission packet from a second antenna at a second rate that differs from the first rate and at the first power modified by a second weight value over a second channel."

A third clear error is that the Patent Office assertion on page 4, lines 21-23, of "The examiner interprets this claim limitation as having only either N1 or N2 present which suggests that only one antenna is used for transmission." **This is seen to be improper on its face.** While the terms of claim 1 provide that either number N_1 or N_2 (representing numbers of systematic bits) may be zero, claim 1 also specifies that the size of the packets M_1 and M_2 are non-zero. An example is that one of the packets M_1 and M_2 has only parity bits and no systematic bits and the other has all N of the systematic bits (e.g., claim 3). The comments at page 3 in the rejection of claim 1 appear to rely on either M_1 or M_2 being zero, which claim 1 excludes. Claim 1 further recites transmitting in parallel from the first and second antennas, and so to read this claim as anticipated/obvious in view of a single antenna embodiment is seen to improperly read out the parallel transmission element of the claim. Relatedly, claims 2-3 are clearly beyond Ketchum regardless of the above argument respecting claim 1, because Ketchum has no transmission in which no information bits are sent (claim 3, N_2 systematic bits=0) and makes no distinction as to which stream might carry more or less of the N systematic bits (claim 2, maximize N_1). The rejection of these claims is seen to follow the misinterpretation of Table 1 and related text, as detailed above.

Given the constraints placed on Applicant in making a Request for a Pre-Appeal Brief Request, the reviewers are directed to pages 8-11 of the response filed June 10, 2008, for a fuller discussion of the deficiencies of Ketchum and Dabak.

The other two secondary references, Salvi and Kim, are not seen to remedy the above noted deficiencies in the prior art.

It is respectfully submitted that the rejections of claims 1-4, 6-11, and 14-28 under 35 U.S.C. 103(a) based on Ketchum and Dabak, whether or not in combination with Salvi and/or Kim, have been overcome, and respectfully requested that the Patent Office reconsider and remove the rejections of these claims. The Patent Office is respectfully requested to favorable consider and allow all of the pending claims 1-4, 6-11, and 14-28 as now presented for examination.

S.N.: 10/718,837
Art Unit: 2683

Respectfully submitted:

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FEB 17, 2009 Karl Amurcy

Date Name of Person Making Deposit